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AUTHOR Huff, Robert A.
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ABSTRACT

A differential funding method for statewide higher education planning is examined, and a case study is presented. There are three basic dimensions or parameters by which higher education funding formulas may be differentiated: course level, discipline cluster, and institutional type. It is suggested that the only effective way to logically address the needs of instructional activities is to consider all three dimensions simultaneously. It is proposed that an acceptable statewide higher education financial planning tool must satisfy three important criteria: simplicity, compatibility with current funding approaches as well as with future trends, and limitations on institutional data contributions. The kind of software system that may prove helpful is comprised of three programs or modules. The preparation module accepts all inputs including both institutional descriptors and planning policy parameters. The calculation module employs the submitted differential funding policies or formulas in conjunction with the credit hour demands produced in the preparation module to compute resource requirements. In addition, with the report module, the outputs of the calculation module are aggregated, sorted, and arrayed in preparation of a series of reports. The use of a prototype statewide planning and budgeting system at Mansfield State College and Shippensburg State College in Pennsylvania is described. It is claimed that computers provide the only means of accurately repeating thousands of calculations necessary for the development of alternative sets of institutional budgets within a short period of time. (SW)

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UNDERGIRDING PROGRAM DECISIONS WITH INFORMATION AND UNIT COSTS:
AN APPROACH TO DIFFERENTIAL FUNDING FOR
STATEWIDE SYSTEMS OF POSTSECONDARY EDUCATIONAL INSTITUTIONS

ROBERT A. HUFF

Executive Secretary
New Mexico Board of Educational Finance

U.S. DEPARTMENT OF EDUCATION
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SHEEO

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Why Differential Funding

Over the past decade the absolute amount of funds, as well as the percentage of the gross national product utilized in support of institutions of higher learning, has increased dramatically. A natural consequence of this increase in appropriations has been critical scrutiny of how the large numbers of dollars have been allocated and expended. With the tightening of purse strings in many states, legislators have had to make difficult decisions regarding the relative return on dollars spent on education versus dollars spent on other important public needs. In addition, fierce competition among institutions for available funds has become commonplace. Faced with an environment in which many hard decisions must be justified, both state officials and educational leaders have begun to demand a more visible and logical process for distributing public funds to the several institutions within a state system.

Few will argue that equity in funding a diverse set of institutions can be found in treating all college and university instructional programs alike when it is time to distribute public dollars. Indeed, if diversity is to be maintained, there must be careful consideration of the differential needs and resource requirements of various programs, instruction levels, and institutions. Thus, differential funding formulas are deemed desirable by many state agency officials, legislators, and educators who fear that diversity will be compromised if blanket funding patterns are applied to all institutions and programs.

The major question no longer is whether to pursue differential funding formulas, but how the process of investigating and evaluating many different suggested variations in the funding pattern can be efficiently handled.

Technological Support for A Political Process

Picture for a moment a conference table surrounded by state officials, trustees, and educational leaders engaged in earnest discussion of the most appropriate way to allocate available higher education funds among several institutions. Many proposals, counter proposals, and suggestions are quickly presented. Each institution can make a persuasive philosophical case for the pattern of funding that will maximize its ability to pursue its own objectives. The problem is that many sets of educational objectives are worthy, but all institutional goals and objectives cannot be pursued with equal vigor. Difficult decisions must be made, but there is no means of quickly assessing the dollar consequences of selecting one suggested funding pattern over another. There is no means of quickly evaluating the trade-offs between opposing funding formulas or the sensitivity of changing existing formulas. The stage is set for the essential political process of funding formula negotiation, but the technology for providing meaningful feedback to the negotiators concerning their proposals is lacking. Under such conditions, meaningful discussion cannot long be sustained and the desired logical, visible process for arriving at fund allocations may be lost in the heat of the political moment. The result is frequently a hasty return to broad, generalized funding formulas that tend to ignore instructional program differences and treat all institutions the same.

It appears that significant improvement in the political negotiation process related to funding could be obtained if technology were made available which would allow quick recalculation of institutional budgets based on changes in the formulas that might be suggested by any member of the negotiating group. Immediate feedback would reveal some proposals as unrealistic in terms of total dollars required, and others as shifting funds in new directions that might or might not be deemed desirable by the entire group.

Many institutions now have the technology to simulate their campus budgets, but there currently exists in most states little, if any, capability to simulate the multi-campus budgeting process. Tools are needed that will free state agency personnel from the drudgery of grinding prodigious quantities of numbers through calculators in order that they may use their time and intellect to investigate funding alternatives in cooperation with campus leaders. Freedom to plan together, to ask many questions concerning alternative funding formulas and receive useful answers will increase the probability that the right questions will be posed and answered. Too frequently institutions have felt that they have been planned *for* by state agencies rather than planned *with*. Ingenuity and patience are required in order to identify the right budgetary questions that should be posed. State agency personnel acting in isolation will frequently fail to identify all of the questions that campus people feel are of paramount importance. Adequate negotiation relative to differential funding formulas will not become a reality until technology is developed that will assist all interested parties in working more effectively together in defining a truly equitable distribution of the limited state higher education resources.

Dimensions of Differential Funding

Consideration of differential funding formulas can make campus administrators somewhat uneasy. A change from funding all instructional activities at an average cost to variable funding of disciplines and course levels suggests a reapportionment of the available pool of higher education dollars. In any redistribution resulting from application of new differential funding formulas, some institutions will gain funds while others must surely lose. The problem is that no one is quite sure exactly how large or in what direction the funding shift might be.

There are two ways in which any individual may approach the task of developing differential funding formulas. One is to consider the effort as a purely political process in which the most wily and skillful negotiator will win a financial advantage for his institution at the expense of sister institutions (assuming a fixed pool of available state higher education dollars). The second is to approach the task with the recognition that professional judgment, experience, and common sense will lead to the conclusion that some course levels, disciplines, and types of institutions are deserving of more than an average amount of funding support while others require somewhat less than the average. The key difference in the two approaches is that the second relies on a combination of reason and philosophical persuasion while the first relies solely on political tactics. The following discussion of the dimensions to be considered when developing funding formulas assumes that the logical, reasoned approach rather than the purely emotional, political approach will be followed.

There are three basic dimensions or parameters by which higher education funding formulas may be differentiated: course level, discipline cluster, and institutional type. Differentiating funding for instruction by course level assumes that it is reasonable to expect variations in class section sizes, faculty contact hour work loads, and instruction related expenses for various course levels. Most educators will agree that graduate instruction is and should be more costly than upper division or lower division instruction. However, it is difficult to know just how much more costly graduate instruction should be. Experienced educators acting in good faith should be able to reach agreement on the differential operating parameters (section size, work load, etc.) and funds required for different course levels.

The argument for differential funding by discipline cluster rests on the fact that some disciplines such as the physical sciences, vocational/technical, and studio art require special laboratory sessions, equipment, and smaller than average student/faculty ratios. Again, few will deny the logic of differentiation for such cases. The problem is in arriving at consensus on the amount of difference that can be justified.

The different missions and modes of operation of a diverse set of state institutions leads many educators to believe that funding approaches should acknowledge and financially support such diversity. As with course levels and discipline clusters, judgment and educational philosophy must be relied upon when considering different levels of funding appropriate for universities, state colleges, and community colleges.

Failure to find reasonable consensus concerning differential needs will erode public confidence in professional educators and damage their credibility. Very simply, it has become unacceptable for educational leaders to say that they either do not know or are unable to agree on the essential differences in how courses at different levels in different disciplines at different types of institutions should be supported in terms of human and other resources. If the professional educators do not know, who does?

If an attempt is made to consider each of the three dimensions (course level, discipline cluster, and institution type) separately, the process of developing differential formulas may soon become confused. The only effective way to logically address the needs of instructional activities is to consider all three dimensions simultaneously. For example, the question is not, what is needed for lower division instruction? Followed by, what is needed for the physical sciences? Followed by, what is needed for universities? Rather, the question should be, what are the resource requirements for lower division instruction in the physical sciences at the universities? Thus, the first task before those attempting to develop meaningful differential funding patterns is to develop a set of discipline planning centers that cut across all three dimensions of the multiple institutions, course levels, and disciplines within the state. By seeking agreement on the aggregates of disciplines, course levels, and institutions that will be considered for differential funding, state and institutional planners will be preparing to give proper attention to the equitable distribution of state higher education funds. Description of a methodology for defining a set of statewide discipline planning centers will be provided later in this paper.

It should be remembered that the state of the art in differential funding is crude at best. If statewide planners attempt to develop myriad differential funding formulas to accommodate everyone's pet discipline, course level, and institution, the budgeting process will probably quickly become mired in its own complexities. The best avenue is to first decide what constitutes the smallest reasonable set of statewide discipline planning centers based on generally acknowledged large differences in resource requirements, and then give careful attention to analyzing the financial support needed for each planning center.

Table I displays the current practice of 16 states in funding higher education institutions. Across the top of the table are the three dimensions discussed above. The figures in the columns define the numbers of course levels, discipline clusters, and different institutional types accommodated in the funding patterns of the 16 states.

It can be quickly noted that a wide variety of practice occurs regarding differential funding formulas. Some states employ no policies at all relative to differential funding by the three dimensions in Table I, although differentiation may occur in those states due to historical precedent and informal political negotiation. Other states have carried the delineation of differential instructional cost centers to an extreme, and one must wonder whether careful attention to analysis of each differentially treated cost center is possible or if historical precedent is merely perpetuated into the future with little regard for what ought to be the differential funding levels. A state operating with five course levels applying to each of 25 discipline clusters in

Table I

Dimensions of Differential Funding for Instruction

In 16 States -- July, 1975

State	Course Levels	Discipline Clusters*	Institutional Types
California	4	By instruction type — lecture, lab, independent study	3
Colorado	5	43	0
Connecticut	3	2 exceptions: Art and Music	0
Illinois	0	3 exceptions in community colleges only	0
Kentucky	0	0	0
Massachusetts	0	0	0
Missouri	4	25	0
Nebraska	0	0	3
New York (SUNY)	3	0	3
North Dakota	4	5 exceptions: Engineering, Pharmacy, Architecture, Nursing, Technical Education	3
Oklahoma	3	0	4
Pennsylvania	0	0	3
South Carolina	3	14	3
Texas	3	19	2
Virginia	7	6	0
West Virginia	6	3 exceptions: Engineering, Engineering Technology, Health Technology	0

*All states fund medical schools and such other special units as veterinary medicine and dentistry in a differential manner. Data related to these instructional programs have not been included in this table.

two different institution types is actually funding instruction differentially in 250 separate cost centers. It is hardly likely that sufficient thought and analysis can be given to the unique needs of that many different discipline planning centers. The time and knowledge of professional personnel will allow thorough consideration, analysis, and negotiation of a limited number of discipline planning centers. Thus, planning centers should be broad in nature rather than overly discrete. It is time to learn to use a yardstick well rather than to attempt to apply a micrometer to a problem that is still poorly understood.

All of the above discussions have related only to the instructional portion of institutional budgets. Consideration of state funding for research, public service, and such support activities as libraries, executive management, and physical plant maintenance pose a completely different set of problems. The current state of the art offers little assistance in preparing formulas for these non-instructional activities. Although support activity formulas that are driven by instructional variables (i.e., student credit hours, FTE faculty, or instructional budget) exist in several states, they have been derived primarily through subjective judgment. Furthermore, many of the support activity expenditures bear little relationship to the instructional portion of the institution. Rising fuel bills are not merely a function of more students. Postponed building maintenance cannot be delayed forever. The most pragmatic approach to developing institutional operating budgets at this time is to employ differential funding formulas for the instructional area and engage in individual analysis of the current needs of the several support activity areas. When funding support activities, the key question usually is not how many students will appear

next year. Rather, the questions become what was the level of funding for the activity last year, what expenditures were or can be postponed, and what inflationary factors have arisen that are most important in setting support activity budgets? Such factors call for specific annual consideration rather than generalized formulas.

Description of the Needed Technology

Statewide educational planning agencies face many dilemmas in interfacing with both institutions and funding bodies. They must secure enough hard data to support resource allocation decisions and, at the same time, not create undue data collection burdens for individual campuses or unduly constrain institutional autonomy in managing institutional operations. Computer assisted approaches to statewide financial planning that focus the attention of educators and state personnel on key budgeting parameters and allow meaningful dialogue concerning differential funding could be very useful. The technological know-how to provide the needed computerized statewide planning and budgeting tools now exists and such tools can be expected to become commonplace during the next few years.

An acceptable statewide higher education financial planning tool must satisfy three important criteria:

1. Simplicity -- Highly complex, esoteric models and approaches have not been well understood nor frequently implemented. Most state agencies do not have large numbers of staff or large amounts of resources for their own operations. Furthermore, legislators and state budget officers must be able to understand the higher education fund negotiation approach without great expenditure of their personal time.

2. Compatibility with current funding approaches as well as future trends — Although a computerized budgeting instrument should allow investigation of new alternatives in resource allocation, any tool that is unable to relate to the ways in which funding of institutions is currently accomplished will have limited acceptability. Change is usually evolutionary rather than revolutionary.

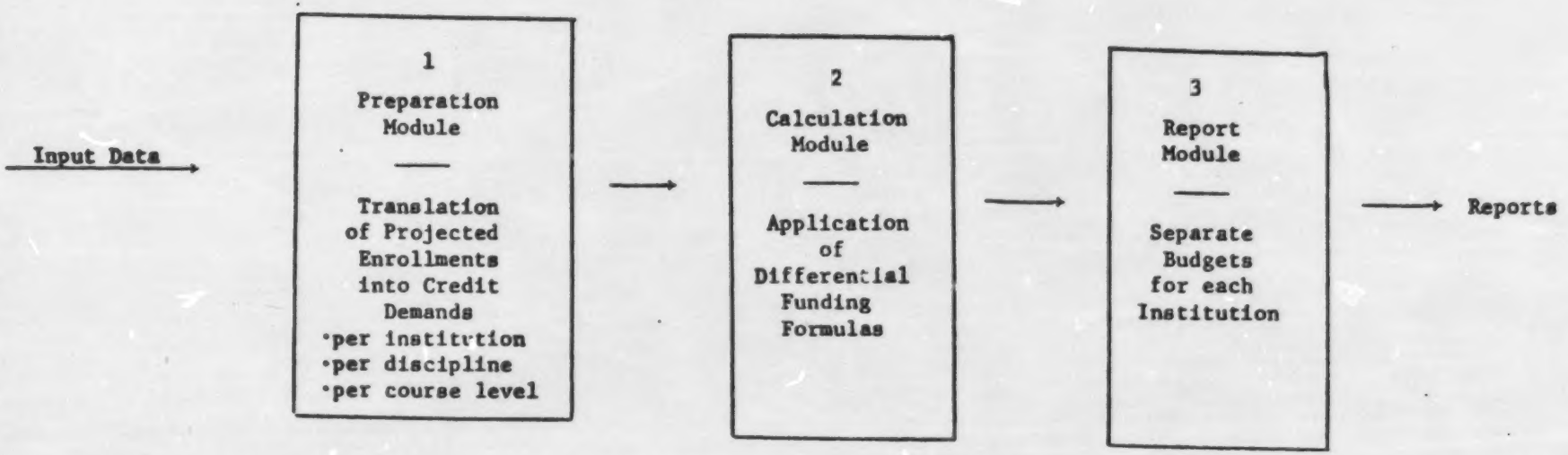
3. Limitations on institutional data contributions — Planning models that depend heavily on massive contributions of data collected in and by institutions are cumbersome at best and politically unacceptable at worst. A truly useful model must operate on a combination of normally collected institutional data and policy decisions. Special institutional data collection efforts to run a statewide planning model are to be avoided.

Figure 1 provides a generalized description of the kind of software system that may prove helpful. The prototype system is comprised of three programs or modules. The Preparation Module accepts all inputs including both institutional descriptors and planning policy parameters. This module computes enrollments at the institutional and program levels, calculates credit hour demands of the various clusters of disciplines identified within the state for differential funding consideration, and edits all input data.

The Calculation Module employs the submitted differential funding policies or formulas in conjunction with the credit hour demands produced in the Preparation Module to compute resource requirements. The resource estimates include numbers of faculty positions for various discipline clusters in different institutions, faculty salary requirements, and other line item expenditures such as support staff, supplies, etc.

Figure 1

Prototype Software Description



The third and last module shown in Figure 1 is the Report Module. Here the outputs of the Calculation Module are aggregated, sorted, and arrayed in preparation for the printing of a series of reports.

An Illustrative Application

One of the best ways to explain the capabilities and potential utility of any piece of new technology is to provide a case study illustration. This has been done with the use of a prototype Statewide Planning and Budgeting System (SPBS) in order to support the following narrative description.

The Pennsylvania Department of Higher Education is currently serving as a pilot test site for the use of a new prototype planning and budgeting model. Two state college campuses have been selected to provide the data base for the project and to serve on a team that will evaluate the effectiveness of the new technology in facilitating the multi-campus planning and budgeting process. The two institutions are Mansfield State College and Shippensburg State College. These two campuses have provided historical information related to enrollments, course registration patterns followed by various types of students, and curriculum offerings that will serve as the data base for the pilot test and for this illustrative case study. The cooperation of these two campuses is greatly appreciated since it is always desirable to test a new software tool with actual data as opposed to contrived input. It should be remembered that while the baseline data in the following illustration are actual, all of the policy decisions and funding formulas that have been used to develop the example are fictitious and do not necessarily represent what is actual or even desirable for the two campuses. For this reason,

and to prevent a casual viewer from hastily scanning the budget reports that are displayed as part of the illustrative case and assuming that the dollar figures are the result of actual funding negotiations, the names of the two institutions have been changed on all reports to Alpha State College and Beta State College.

The prototype SPBS is initiated with forecasts of student enrollments in the various institutions of the multi-campus system. The enrollment projections must be broken down to indicate the numbers of students who will enter at various student levels in various degree programs. At Alpha and Beta State Colleges the three student levels used were lower division, upper division, and graduate level. Table II displays the SPBS projected enrollment report for the two campuses. It can be noted that Alpha State College is expecting an enrollment of 3,006 while Beta State College anticipates 4,776 full time equivalent students.

Differential funding of instructional disciplines assumes that students taking courses in different disciplines at different course levels consume varying amounts of resources. Thus, an effective planning strategy must assess the demands that the projected enrollments will place on the various discipline clusters and fund them accordingly. Figure 2 illustrates the interaction of students in the various degree programs at Alpha State College with the instructional disciplines offered there. For example, a student entering as a lower division biology major can be expected to take a certain number of biology courses but that same student will also be required to take courses in mathematics, the social sciences, and many of the other disciplines offered by the institution. The SPBS uses numerical descriptions of the historical interaction between all types of student majors and all disciplines along

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TABLE II

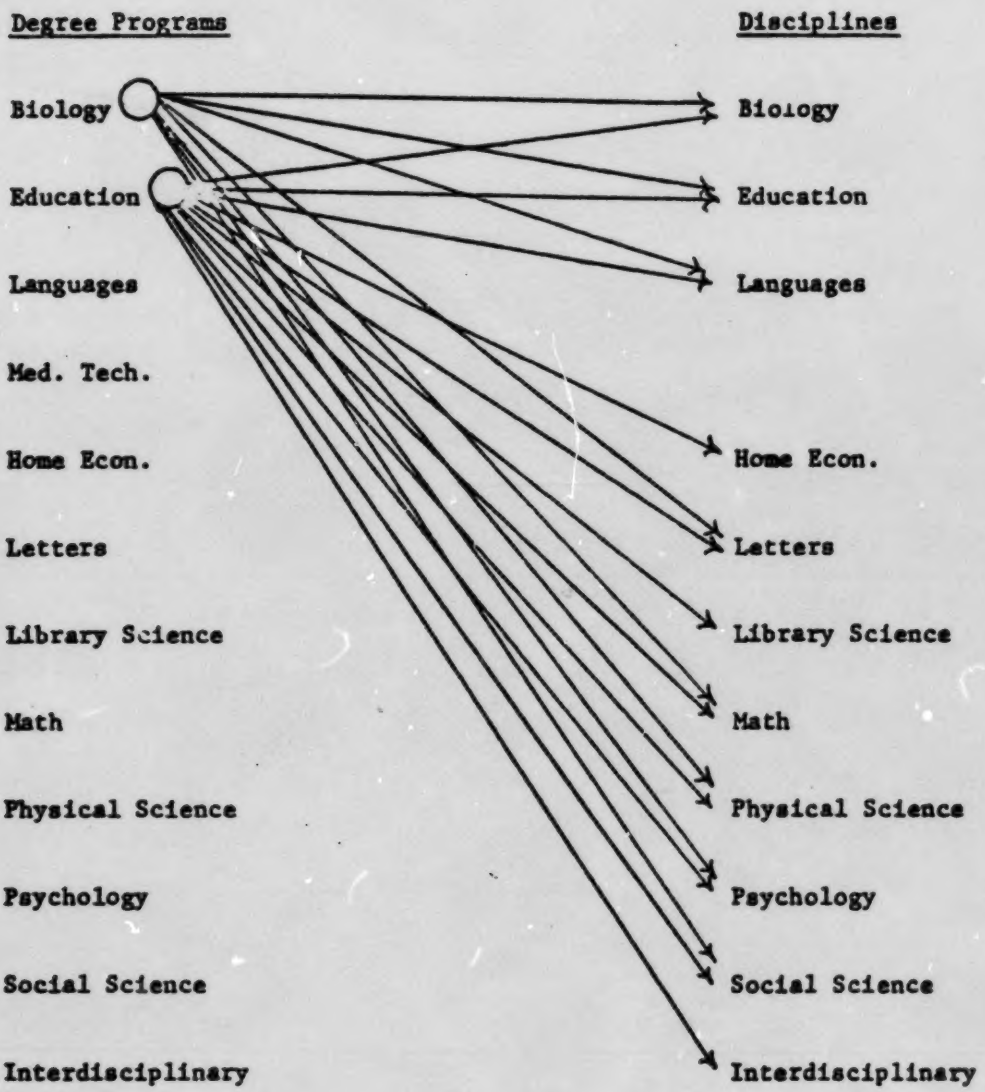
STATEWIDE PLANNING AND BUDGETING SYSTEM

ENROLLMENT REPORT

INSTITUTION	PROGRAM	TOTAL	.LO	.UD	.GR
Alpha State College	04 BIOLOGY	120	62	58	
	08 EDUCATION	1,090	486	574	30
	10 FINE ARTS	73	41	29	2
	11 LANGUAGES	34	13	21	
	12 MED. TECH.	41	33	8	
	13 HOME ECON	455	248	207	
	15 LETTERS	102	44	52	6
	16 LIBRARY SCI	24	2	22	
	17 MATH	80	40	39	
	19 PHYSICAL SCI	61	29	32	
	20 PSYCHOLOGY	164	60	104	
	22 SOCIAL SCI	446	212	230	5
	49 INTERDISC	300	221	40	39
	52 MED TECH-2	9	9		
	99 UNDECLARED	8	1		7
Alpha State College	TOTALS	3,006	1,501	1,416	89
Beta State College	04 BIOLOGY	246	165	73	8
	05 BUSINESS	1,071	747	293	31
	06 COMMUNICAT	262	167	68	27
	08 EDUCATION	1,318	608	453	257
	10 FINE ARTS	1			1
	11 LANGUAGES	68	40	28	
	12 MED. TECH.	46	36	10	
	15 LETTERS	150	64	74	12
	16 LIBRARY SCI	112	48	46	19
	17 MATH	163	93	59	11
	19 PHYSICAL SCI	118	60	55	4
	20 PSYCHOLOGY	124	90	40	
	21 PUBLIC AFFRS	282	159	85	38
	22 SOCIAL SCI	536	313	201	21
	91 CONTINU ED	42	42		
	99 UNDECLARED	230	171		59
Beta State College	TOTALS	4,776	2,404	1,455	488
	SYSTEM TOTALS	7,782	4,305	2,900	577

Figure 2

Degree Program/Discipline Interaction
at Alpha State College



* Interaction lines are shown for only two of the fourteen degree programs to avoid an overly confusing set of lines in the diagram.

with the previously reported enrollment forecasts to project the credit hour demand that the enrollments will place on each discipline. Table III shows the credit hour demands resulting from such calculations at Alpha and Beta State Colleges.

All of the computations to this point have occurred in the Preparation Module of the SPBS software. Shifting to the Calculation Module requires development of a series of trial policies related to differential funding that may be inserted into the model.

The first concern pertains to the development of discipline planning centers for differential funding consideration. It has previously been pointed out that one of the dangers in attempting differential funding is seeking to deal with too much detail. Each of the credit demand figures in Table III is a potential planning center that could be funded in a unique, differential manner. Beginning with the demand on lower division (.20) biology at Alpha State College for 4,861 credits, there are 69 separate credit demand figures listed in Table III for the two institutions. Clearly, if each of these figures was considered a unique planning center, it would be extremely difficult to give the time required for thorough objective and subjective analysis of all of their differential resource requirements. A practical alternative is to group a number of disciplines that are felt to be somewhat similar in their resource requirements into aggregate planning centers. With fewer planning centers, thorough analysis and funding negotiations could be carried out. Differential funding formulas in higher education should seek first to accommodate the large variations in funding needs that can be measured in dollars before they attempt to deal with the smaller variations that must be measured in pennies. Table IV displays the results of the process of constructing discipline planning centers

TABLE III

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STATEWIDE PLANNING AND BUDGETING SYSTEM

CREDIT DEMAND REPORT

INSTITUTION	DISCIPLINE	TOTAL	.20*	.30*	.50*
Alpha State College	04 BIOLOGY	5,736	4,961	478	
	05 EDUCATION	35,067	16,190	16,744	2,133
	11 LANGUAGES	2,097	1,778	319	
	13 HOME ECON	6,975	3,568	3,407	
	15 LETTERS	11,167	9,903	1,096	168
	16 LIBRARY SCI	506	48	458	
	17 MATH	2,902	2,692	207	3
	19 PHYSICAL SCI	5,268	4,665	604	
	20 PSYCHOLOGY	6,827	4,924	1,665	238
	22 SOCIAL SCI	12,975	9,096	3,808	71
	49 INTERDISC	122	94	22	6
Alpha State College	TOTALS	89,644	57,817	29,208	2,619
Beta State College	04 BIOLOGY	7,221	5,527	529	165
	05 BUSINESS	19,109	8,703	9,449	957
	06 COMMUNICAT	2,698	1,284	790	624
	08 EDUCATION	22,217	4,428	12,361	5,428
	0837 HEALTH PE	2,880	2,880		
	0838 BUS ED	4,650	2,151	2,315	183
	10 FINE ARTS	4,522	2,767	1,698	57
	11 LANGUAGES	1,018	1,020	298	
	15 LETTERS	15,658	14,731	612	315
	16 LIBRARY SCI	2,316	1,158	738	420
	17 MATH	8,079	7,283	676	120
	19 PHYSICAL SCI	5,241	4,509	714	18
	20 PSYCHOLOGY	9,679	5,802	1,658	1,209
	21 SOCIAL WELF	3,022	1,293	1,729	
	22 SOCIAL SCI	31,435	25,731	4,270	1,434
Beta State College	TOTALS	140,346	91,568	37,348	10,930
	SYSTEM TOTALS	229,990	149,385	67,056	13,549

* .20 is a code used to designate lower division course level.

.30 is a code used to designate upper division course level.

.50 is a code used to designate graduate division course level.

TABLE IV: Discipline Planning Center Construction

Planning Center 1

Lower Division	Biology	ALL*
Lower Division	Physical Sci.	ALL
Lower Division	Fine Arts	ALL
Lower Division	Home Econ	ALL

Planning Center 2

Lower Division	Business	ALL
Lower Division	Business Ed.	ALL
Lower Division	Communications	ALL
Lower Division	Languages	ALL

Planning Center 3

Lower Division	Education	ALL
Lower Division	Health & P.E.	ALL
Lower Division	Letters	ALL
Lower Division	Library Sci.	ALL
Lower Division	Math	ALL
Lower Division	Psychology	ALL
Lower Division	Social Welfare	ALL
Lower Division	Social Science	ALL
Lower Division	Interdisciplinary	ALL

Planning Center 4

Upper Division	Biology	ALL
Upper Division	Physical Sci.	ALL
Upper Division	Fine Arts	ALL
Upper Division	Home Econ	ALL

Planning Center 5

Upper Division	Business	ALL
Upper Division	Business Ed.	ALL
Upper Division	Communications	ALL
Upper Division	Languages	ALL

Planning Center 6

Upper Division	Education	ALL
Upper Division	Health & P.E.	ALL
Upper Division	Letters	ALL
Upper Division	Library Sci.	ALL
Upper Division	Math	ALL
Upper Division	Psychology	ALL
Upper Division	Social Welfare	ALL
Upper Division	Social Science	ALL
Upper Division	Interdisciplinary	ALL

Planning Center 7

Grad. Division	Biology	ALL
Grad. Division	Physical Sci.	ALL
Grad. Division	Fine Arts	ALL

Planning Center 8

Grad. Division	Business	ALL
Grad. Division	Business Ed.	ALL
Grad. Division	Communications	ALL

Planning Center 9

Grad. Division	Education	ALL
Grad. Division	Letters	ALL
Grad. Division	Library Sci.	ALL
Grad. Division	Math	ALL
Grad. Division	Psychology	ALL
Grad. Division	Social Sci.	ALL

* The word ALL refers to the fact that the discipline and planning center will apply to ALL institutions, i.e., Lower Division Biology in ALL institutions.

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by aggregating the several disciplines at Alpha and Beta State Colleges in accordence with their similarities in resource requirements. As shown in Table IV, the result of that process is the construction of nine planning centers that encompass both institutions. With the identification of the nine planning centers, the stage is set for discussion of the amount of variations in human and other resources that will be supported by the funding agency.

Table V shows the funding formulas that were developed and used at Alpha and Beta State Colleges for each of the nine planning centers. It can be noted that Planning Center 1 will carry a student faculty ratio of 18 students to each faculty position and that each faculty position will be supported at the rate of $15,000 for salary and fringes. Also, Planning Center 1 will be funded for secretarial support at the rate of a $3,000 minumum base plus an additional $500 per each faculty position. Finally, supplies and expenses for Planning Center 1 will be provided by a formula that allocates a minumum base of $1,000 to each discipline, plus $200 per each discipline faculty position, plus $2 for each credit hour generated. Application of the formulas displayed in Table V at Alpha and Beta State Colleges results in the generation of the SPBS Discipline Budget Report shown in Table VI.

The Discipline Budget Report is typical of the line item budgets that virtually all institutions develop and use for daily operation and control purposes. In this illustration only three line items were included for each discipline. However, the system allows the calculation of any number of discipline line items with any locally defined titles such as travel, communication, duplication, computing, etc.

Table V

Discipline Planning Center Funding Formulas

Planning Center	Student/Faculty Ratio	Dollars Per Faculty Position
PC1	18 to 1	$15,000
PC2	20 to 1	$15,000
PC3	24 to 1	$15,000
PC4	15 to 1	$18,000
PC5	18 to 1	$17,000
PC6	20 to 1	$17,000
PC7	10 to 1	$20,000
PC8	12 to 1	$19,000
PC9	15 to 1	$19,000

Planning Center	Secretarial Support Formulas
PC1	$3,000 Base + $500 per Faculty Position
PC2	$3,000 Base + $500 per Faculty Position
PC3	$3,000 Base + $700 per Faculty Position
PC4	$3,000 Base + $700 per Faculty Position
PC5	$3,000 Base + $700 per Faculty Position
PC6	$3,000 Base + $800 per Faculty Position
PC7	$800 per Faculty Position
PC8	$900 per Faculty Position
PC9	$1,000 per Faculty Position

Planning Center	Supplies and Expenses Formulas
PC1	$1,000 Base + $200 per Faculty Position + $2.00 per student credit
PC2	$1,000 Base + $200 per Faculty Position + $1.50 per student credit
PC3	$1,000 Base + $200 per Faculty Position + $1.00 per student credit
PC4	$1,000 Base + $300 per Faculty Position + $3.00 per student credit
PC5	$1,000 Base + $300 per Faculty Position + $2.00 per student credit
PC6	$1,000 Base + $300 per Faculty Position + $1.50 per student credit
PC7	$1,000 Base + $400 per Faculty Position + $4.00 per student credit
PC8	$1,000 Base + $400 per Faculty Position + $3.00 per student credit
PC9	$1,000 Base + $400 per Faculty Position + $2.00 per student credit

TABLE VI

STATEWIDE PLANNING AND BUDGETING SYSTEM

DISCIPLINE BUDGET REPORT

INSTITUTION	DISCIPLINE	TOTAL	.20	.30	.50
Alpha State College					
04 BIOLOGY	FACULTY SALARIES	170,130	135,015	35,114	
	SECRETARIAL	11,866	7,501	4,356	
	SUPPLIES + EXP	16,740	12,521	4,219	
	DISCIPLINE TOTAL	198,736	155,037	43,699	
06 EDUCATION	FACULTY SALARIES	924,283	337,290	474,415	112,578
	SECRETARIAL	47,200	18,740	22,535	5,925
	SUPPLIES + EXP	65,945	21,587	34,498	9,769
	DISCIPLINE TOTAL	1,037,428	377,717	531,438	128,273
11 LANGUAGES	FACULTY SALARIES	54,491	44,450	10,041	
	SECRETARIAL	7,895	4,482	3,413	
	SUPPLIES + EXP	6,075	4,260	1,815	
	DISCIPLINE TOTAL	68,461	53,192	15,269	
13 HOME ECON	FACULTY SALARIES	235,390	99,110	136,279	
	SECRETARIAL	14,603	5,304	8,300	
	SUPPLIES + EXP	22,950	9,457	13,492	
	DISCIPLINE TOTAL	272,943	114,171	158,072	
15 LETTERS	FACULTY SALARIES	246,228	206,304	31,057	8,867
	SECRETARIAL	17,373	12,428	4,279	467
	SUPPLIES + EXP	18,536	13,453	3,192	1,891
	DISCIPLINE TOTAL	282,136	232,185	38,528	11,025
16 LIBRARY SCI	FACULTY SALARIES	13,977	1,000	12,977	
	SECRETARIAL	6,591	3,047	3,539	
	SUPPLIES + EXP	2,977	1,061	1,916	
	DISCIPLINE TOTAL	23,536	5,108	18,428	
17 MATH	FACULTY SALARIES	62,101	55,079	5,853	154
	SECRETARIAL	8,867	5,617	3,241	8
	SUPPLIES + EXP	6,866	4,440	1,414	1,012
	DISCIPLINE TOTAL	77,833	65,136	10,518	1,179
19 PHYSICAL SCI	FACULTY SALARIES	153,719	129,572	24,147	
	SECRETARIAL	11,258	7,319	3,939	
	SUPPLIES + EXP	15,270	12,057	3,213	
	DISCIPLINE TOTAL	180,247	148,948	31,299	
20 PSYCHOLOGY	FACULTY SALARIES	162,317	102,573	47,151	12,593
	SECRETARIAL	13,391	7,787	4,943	661
	SUPPLIES + EXP	13,600	7,291	4,330	1,979
	DISCIPLINE TOTAL	189,309	117,651	56,459	15,203

TABLE VI (continued)

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PROTOTYPE
VPISU-HUFF

STATEWIDE PLANNING AND BUDGETING SYSTEM

DISCIPLINE BUDGET REPORT

INSTITUTION	DISCIPLINE	TOTAL	.20	.30	.50
Alpha State College					
22 SOCIAL SCI	FACULTY SALARIES	301,130	189,498	107,385	3,747
	SECRETARIAL	19,483	11,843	7,442	197
	SUPPLIES + EXP	22,530	12,623	8,615	1,292
	DISCIPLINE TOTAL	343,143	213,964	123,943	5,236
49 INTERDISC	FACULTY SALARIES	2,899	1,959	624	317
	SECRETARIAL	6,134	3,091	3,026	17
	SUPPLIES + EXP	3,189	1,120	1,044	1,025
	DISCIPLINE TOTAL	12,222	6,171	4,693	1,358
Alpha State College	INSTITUTION TOT	2,685,995	1,491,379	1,032,343	162,273
Beta State College					
04 BIOLOGY	FACULTY SALARIES	216,223	181,312	21,150	13,750
	SECRETARIAL	13,417	9,044	3,823	550
	SUPPLIES + EXP	21,347	15,472	2,940	1,935
	DISCIPLINE TOTAL	250,986	206,828	27,923	16,235
05 BUSINESS	FACULTY SALARIES	578,170	217,576	297,458	63,136
	SECRETARIAL	28,492	10,253	15,248	2,991
	SUPPLIES + EXP	47,302	16,956	25,147	5,200
	DISCIPLINE TOTAL	653,964	244,784	337,853	71,327
06 COMMUNICAT	FACULTY SALARIES	98,141	32,103	24,973	41,166
	SECRETARIAL	10,044	4,070	4,024	1,950
	SUPPLIES + EXP	10,112	3,354	3,019	3,739
	DISCIPLINE TOTAL	118,298	39,527	31,916	46,855
08 EDUCATION	FACULTY SALARIES	728,957	92,252	350,228	286,477
	SECRETARIAL	39,804	7,305	17,421	15,078
	SUPPLIES + EXP	55,695	5,658	25,722	23,315
	DISCIPLINE TOTAL	824,457	106,215	393,372	324,870
0837 HEALTH PE	FACULTY SALARIES	60,006	60,006		
	SECRETARIAL	5,800	5,800		
	SUPPLIES + EXP	4,680	4,680		
	DISCIPLINE TOTAL	70,486	70,486		
0838 BUS ED	FACULTY SALARIES	138,754	53,766	72,916	12,072
	SECRETARIAL	11,387	4,792	6,002	572
	SUPPLIES + EXP	13,663	4,943	6,919	1,803
	DISCIPLINE TOTAL	163,784	63,501	85,838	14,447
10 FINE ARTS	FACULTY SALARIES	149,521	75,447	67,924	4,749
	SECRETARIAL	11,393	5,362	5,842	190
	SUPPLIES + EXP	16,167	7,558	7,226	1,323

TABLE VI (continued)

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PROTOTYPE
VPISU-HUFF

STATEWIDE PLANNING AND BUDGETING SYSTEM

DISCIPLINE BUDGET REPORT

INSTITUTION	DISCIPLINE	TOTAL	.20	.30	.50
Beta State College					
	DISCIPLINE TOTAL	177,021	89,767	80,792	6,262
11 LANGUAGES	FACULTY SALARIES	42,387	33,004	9,382	
	SECRETARIAL	7,486	4,100	3,385	
	SUPPLIES + EXP	5,182	3,420	1,762	
	DISCIPLINE TOTAL	55,055	40,525	14,530	
15 LETTERS	FACULTY SALARIES	340,852	305,887	17,341	16,625
	SECRETARIAL	21,910	17,321	3,714	875
	SUPPLIES + EXP	24,341	19,422	2,224	2,295
	DISCIPLINE TOTAL	387,104	344,031	23,279	19,795
16 LIBRARY SCI	FACULTY SALARIES	67,202	24,125	20,910	22,167
	SECRETARIAL	9,154	4,126	3,861	1,167
	SUPPLIES + EXP	7,682	2,480	2,476	2,727
	DISCIPLINE TOTAL	84,038	30,731	27,247	26,060
17 MATH	FACULTY SALARIES	177,223	151,735	19,154	6,333
	SECRETARIAL	14,203	10,081	3,759	333
	SUPPLIES + EXP	14,152	10,306	2,352	1,493
	DISCIPLINE TOTAL	205,578	172,123	25,295	8,160
19 PHYSICAL SCI	FACULTY SALARIES	155,318	125,258	28,550	1,500
	SECRETARIAL	11,346	7,175	4,111	60
	SUPPLIES + EXP	16,409	11,589	3,618	1,102
	DISCIPLINE TOTAL	183,073	144,122	36,299	2,662
20 PSYCHOLOGY	FACULTY SALARIES	252,784	141,716	47,250	63,809
	SECRETARIAL	17,918	9,613	4,946	3,358
	SUPPLIES + EXP	19,998	9,592	4,338	5,970
	DISCIPLINE TOTAL	290,699	161,021	56,542	73,136
21 SOCIAL WELF	FACULTY SALARIES	75,924	25,937	48,987	
	SECRETARIAL	9,274	4,257	5,017	
	SUPPLIES + EXP	7,110	2,552	4,558	
	DISCIPLINE TOTAL	92,309	33,747	58,562	
22 SOCIAL SCI	FACULTY SALARIES	732,734	535,084	120,957	75,683
	SECRETARIAL	39,981	28,316	7,982	3,983
	SUPPLIES + EXP	50,314	33,479	9,540	6,895
	DISCIPLINE TOTAL	823,029	597,958	138,509	86,561
Beta State College	INSTITUTION TOT	4,379,883	2,345,665	1,337,347	696,371
	SYSTEM TOTALS	7,065,878	3,937,043	2,370,190	858,645

The Discipline Budget Report indicates that a total of $2,685,995 must be provided for Alpha State College and $4,379,883 for Beta State College in support of their instructional programs, if they are to be operated in the manner defined by the differential funding formulas employed in the calculations. Should the members of the statewide planning group wish to examine the fiscal consequences of changing some of the formulas in any of the disciplines or planning centers at one or both of the institutions, the SPBS software tool could provide immediate feedback. Some typical questions that might be entertained during the funding negotiation process are: What if the student/faculty ratio at Beta State College was raised by ten percent to increase faculty productivity, and a concurrent 15 percent salary increase was granted? What if a ceiling on graduate level enrollments was placed on Alpha State College during the next budgetary period? What would it cost to honor a request from Beta State College to decrease the student/faculty ratio in library science at the graduate level to 12 to 1? An important aspect of the budget development process is the investigation of many alternatives and the posing of many different questions related to institutional funding. A statewide higher education budget, properly arrived at, should be calculated and recalculated many times in search of the pattern of resource allocation that will satisfy the maximum number of educational needs with the available funds. Hand calculated budget approaches will never allow this to happen.

Another array of useful information concerning the discipline budgets of the two state colleges is provided in the SPBS Discipline Parameter Report as shown in Table VII. In this report the number of faculty positions, along with the total budget and cost per credit

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TABLE VII
STATEWIDE PLANNING AND BUDGETING SYSTEM

DISCIPLINE PARAMETER REPORT

	DISCIPLINE	COURSE LEVEL	FACULTY POSITIONS	BUDGET	CREDIT DEMAND	UNIT COST
Alpha State College						
	04 BIOLOGY	.20	9.00	155,037	4,861	31.90
	04 BIOLOGY	.30	1.95	43,699	878	49.78
	08 EDUCATION	.20	22.49	377,717	16,190	23.33
	08 EDUCATION	.30	27.91	531,438	16,744	31.74
	08 EDUCATION	.50	5.93	128,273	2,133	60.14
	11 LANGUAGES	.20	2.96	53,192	1,778	29.92
	11 LANGUAGES	.30	.59	15,269	319	47.87
	13 HOME ECON	.20	6.61	114,871	3,568	32.20
	13 HOME ECON	.30	7.57	158,072	3,407	46.40
	15 LETTERS	.20	13.75	232,585	9,903	23.49
	15 LETTERS	.30	1.83	38,526	1,096	35.15
	15 LETTERS	.50	.47	11,025	168	65.62
	16 LIBRARY SCI	.20	.07	5,108	48	106.42
	16 LIBRARY SCI	.30	.76	18,428	458	40.23
	17 MATH	.20	3.74	66,136	2,692	24.57
	17 MATH	.30	.34	10,518	207	50.83
	17 MATH	.50	.01	1,179	3	392.46
	19 PHYSICAL SCI	.20	8.64	148,948	4,665	31.93
	19 PHYSICAL SCI	.30	1.34	31,299	604	51.85
	20 PSYCHOLOGY	.20	6.64	117,651	4,924	23.90
	20 PSYCHOLOGY	.30	2.78	56,454	1,665	33.90
	20 PSYCHOLOGY	.50	.66	15,203	238	63.87
	22 SOCIAL SCI	.20	12.63	213,964	9,096	23.52
	22 SOCIAL SCI	.30	6.35	123,943	3,808	32.55
	22 SOCIAL SCI	.50	.20	5,236	71	73.75
	49 INTERDISC	.20	.13	6,174	94	65.62
	49 INTERDISC	.30	.04	4,693	22	213.20
	49 INTERDISC	.50	.02	1,358	6	226.32
Alpha State College	INSTITUTION TOTALS		145.59	2,685,995	89,644	29.96
Beta State College						
	04 BIOLOGY	.20	12.09	206,828	6,527	31.69
	04 BIOLOGY	.30	1.18	27,923	529	52.78
	04 BIOLOGY	.50	.69	16,235	165	98.39
	05 BUSINESS	.20	14.51	244,794	8,703	28.13
	05 BUSINESS	.30	17.50	337,853	9,449	35.76
	05 BUSINESS	.50	3.32	71,327	957	74.53
	06 COMMUNICAT	.20	2.14	39,527	1,284	30.78
	06 COMMUNICAT	.30	1.46	31,916	790	40.40
	06 COMMUNICAT	.50	2.17	46,855	624	75.09
	08 EDUCATION	.20	5.15	106,215	4,428	23.99
	08 EDUCATION	.30	20.60	393,372	12,361	31.82
	08 EDUCATION	.50	10.06	324,870	5,429	59.85
	0837 HEALTH PE	.20	4.00	70,496	2,880	24.47
	0838 BUS ED	.20	3.59	63,501	2,151	29.53

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TABLE VII (continued)

STATEWIDE PLANNING AND BUDGETING SYSTEM

DISCIPLINE PARAMETER REPORT

	DISCIPLINE	COURSE LEVEL	FACULTY POSITIONS	BUDGET	CREDIT DEMAND	UNIT COST
Beta State College						
	0836 BUS ED	.30	4.29	85,838	2,316	37.06
	0838 BUS ED	.50	.64	14,447	183	78.95
	10 FINE ARTS	.20	5.12	89,967	2,767	32.52
	10 FINE ARTS	.30	3.77	80,794	1,698	47.58
	10 FINE ARTS	.50	.24	6,264	57	109.88
	11 LANGUAGES	.20	2.20	40,525	1,320	30.70
	11 LANGUAGES	.30	.55	14,530	298	48.75
	15 LETTERS	.20	20.46	348,031	14,731	23.35
	15 LETTERS	.30	1.02	23,279	612	38.04
	15 LETTERS	.50	.88	19,795	315	62.84
	16 LIBRARY SCI	.20	1.61	30,731	1,159	26.54
	16 LIBRARY SCI	.30	1.23	27,247	738	36.92
	16 LIBRARY SCI	.50	1.17	26,060	420	62.05
	17 MATH	.20	10.12	172,123	7,283	23.63
	17 MATH	.30	1.13	25,295	676	37.42
	17 MATH	.50	.33	8,160	120	66.00
	19 PHYSICAL SCI	.20	5.35	144,122	4,509	31.96
	19 PHYSICAL SCI	.30	1.59	36,249	714	50.82
	19 PHYSICAL SCI	.50	.08	2,652	18	147.89
	20 PSYCHOLOGY	.20	9.45	161,021	6,802	23.67
	20 PSYCHOLOGY	.30	2.78	56,542	1,668	33.90
	20 PSYCHOLOGY	.50	3.36	73,136	1,209	60.49
	21 SOCIAL WELF	.20	1.80	33,847	1,293	25.18
	21 SOCIAL WELF	.30	2.88	58,462	1,769	33.01
	22 SOCIAL SCI	.20	35.74	597,958	25,731	23.24
	22 SOCIAL SCI	.30	7.16	138,509	4,270	32.44
	22 SOCIAL SCI	.50	3.98	80,551	1,434	80.36
Beta State College	INSTITUTION TOTALS		236.32	4,379,883	140,346	31.21
	SYSTEM TOTALS		381.91	7,065,878	229,990	30.72

(unit cost), are displayed for each course level of each discipline. Note that the dollar total for each of the institutions is the same as in the previous Discipline Budget Report (Table VI). The dollars have merely been displayed along with some new information in a new way.

A third SPBS report pertaining to the instructional budgets of the two institutions is the Degree Program Budget Report as shown in Table VIII. In this report, the funds required for each output producing degree program are displayed, along with the cost per full time equivalent student at each student level in each degree program. Frequently, the most important question for funding agencies such as legislatures is, "What is the public getting for the higher education dollars it is expending?" The Degree Program Budget Report relates budgeted funds to educated and trained students (outputs), rather than to input requirements such as faculty salaries, travel, and supplies. It should again be noted that the total instructional budget dollars have not changed in any of the reports. The instructional budget for each institution has merely been arrayed in different ways in order to provide more information for decision makers.

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TABLE VIII
STATEWIDE PLANNING AND BUDGETING SYSTEM

DEGREE PROGRAM BUDGET REPORT

Alpha State College

PROGRAM	STUDENT LEVEL	NUMBER OF FTE MAJORS	COST PER MAJOR	PROGRAM COST
04 BIOLOGY	.LD	62.17	854	53,102
04 BIOLOGY	.UD	57.60	1,076	61,981
04 BIOLOGY	Totals	119.77	961	115,082
08 EDUCATION	.GR	30.29	1,406	42,581
08 EDUCATION	.LD	486.03	756	367,619
08 EDUCATION	.UD	573.56	903	518,010
08 EDUCATION	Totals	1,089.88	8 2	928,210
10 FINE ARTS	.GR	2.33	1,002	2,337
10 FINE ARTS	.LD	41.20	755	31,103
10 FINE ARTS	.UD	29.17	888	25,907
10 FINE ARTS	Totals	72.70	816	59,347
11 LANGUAGES	.LD	12.93	8 7	11,343
11 LANGUAGES	.UD	20.77	1,049	21,774
11 LANGUAGES	Totals	33.70	983	33,117
12 MED. TECH.	.GR			
12 MED. TECH.	.LD	32.77	845	27,687
12 MED. TECH.	.UD	7.80	1,136	8,859
12 MED. TECH.	Totals	40.56	901	36,545
13 HOME ECON	.LD	247.60	862	213,479
13 HOME ECON	.UD	207.43	1,141	236,669
13 HOME ECON	Totals	455.03	969	450,148
15 LETTERS	.GR	5.63	1,732	9,740
15 LETTERS	.LD	43.83	784	34,373
15 LETTERS	.UD	52.43	890	46,677
15 LETTERS	Totals	101.89	891	90,791
16 LIBRARY SCI	.LD	2.23	1,362	3,042
16 LIBRARY SCI	.UD	21.90	1,074	23,528
16 LIBRARY SCI	Totals	24.13	1,101	26,570
17 MATH	.GR			
17 MATH	.LD	40.20	773	31,081
17 MATH	.UD	39.46	1,003	39,586
17 MATH	Totals	79.66	887	70,667
19 PHYSICAL SCI	.LD	29.27	847	24,795
19 PHYSICAL SCI	.UD	32.07	1,153	36,959
19 PHYSICAL SCI	Totals	61.33	1,007	61,754
20 PSYCHOLOGY	.LD	60.03	783	47,018
20 PSYCHOLOGY	.UD	103.60	903	93,530
20 PSYCHOLOGY	Totals	163.63	859	140,549

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TABLE VIII (continued)
STATEWIDE PLANNING AND BUDGETING SYSTEM
DEGREE PROGRAM BUDGET REPORT

	PROGRAM	STUDENT LEVEL	NUMBER OF FTE MAJORS	COST PER MAJOR	PROGRAM COST
Alpha State College					
	22 SOCIAL SCI	.GR	4.67	1,591	7,426
	22 SOCIAL SCI	.LD	211.93	769	163,039
	22 SOCIAL SCI	.UD	229.80	872	200,283
	22 SOCIAL SCI	Totals	446.40	831	370,748
	49 INTERDISC	.GR	39.25	1,445	56,708
	49 INTERDISC	.LD	220.[illegible]	872	192,670
	49 INTERDISC	.UD	39.93	873	34,877
	49 INTERDISC	Totals	300.02	947	284,255
	52 MED TECH-2	.LD	9.43	766	7,229
	52 MED TECH-2	Totals	9.43	766	7,229
	99 UNDECLARED	.GR	6.71	1,407	9,437
	99 UNDECLARED	.LD	1.03	1,497	1,547
	99 UNDECLARED	Totals	7.74	1,419	10,984
Alpha State College	INSTITUTION Totals		3,005.90	894	2,685,996
Beta State College	04 BIOLOGY	.GR	7.63	2,168	16,529
	04 BIOLOGY	.LD	165.17	861	142,130
	04 BIOLOGY	.UD	72.60	998	72,444
	04 BIOLOGY	Totals	245.39	942	231,103
	05 BUSINESS	.GR	30.62	1,660	50,823
	05 BUSINESS	.LD	747.16	834	622,818
	05 BUSINESS	.UD	293.13	968	283,720
	05 BUSINESS	Totals	1,070.92	894	957,361
	06 COMMUNICAT	.GR	27.13	1,739	47,167
	06 COMMUNICAT	.LD	166.97	797	133,109
	06 COMMUNICAT	.UD	67.93	892	60,576
	06 COMMUNICAT	Totals	262.03	919	240,852
	08 EDUCATION	.GR	256.92	1,451	372,698
	08 EDUCATION	.LD	608.03	825	501,426
	08 EDUCATION	.UD	453.24	922	417,740
	08 EDUCATION	Totals	1,318.19	980	1,291,864
	10 FINE ARTS	.GR	1.00	1,538	1,538
	10 FINE ARTS	Totals	1.00	1,538	1,538
	11 LANGUAGES	.LD	40.13	874	35,091
	11 LANGUAGES	.UD	28.07	983	27,581
	11 LANGUAGES	Totals	68.20	919	62,672
	12 MED. TECH.	.LD	36.27	861	31,210
	12 MED. TECH.	.UD	10.03	990	9,931

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TABLE VIII (continued)

STATEWIDE PLANNING AND BUDGETING SYSTEM

DEGREE PROGRAM BUDGET REPORT

Beta State College	PROGRAM	STUDENT LEVEL	NUMBER OF FTE MAJORS	COST PER MAJOR	PROGRAM COST
	12 MED. TECH.	Totals	46.30	889	41,141
	15 LETTERS	.GR	11.88	1,517	18,013
	15 LETTERS	.LD	63.63	785	49,964
	15 LETTERS	.UD	74.47	863	64,241
	15 LETTERS	Totals	149.97	882	132,218
	16 LIBRARY SCI	.GR	18.50	1,476	27,305
	16 LIBRARY SCI	.LD	48.23	808	38,961
	16 LIBRARY SCI	.UD	45.67	908	41,447
	16 LIBRARY SCI	Totals	112.40	958	107,714
	17 MATH	.GR	11.25	1,289	14,497
	17 MATH	.LD	93.33	788	73,585
	17 MATH	.UD	58.67	932	54,697
	17 MATH	Totals	163.25	875	142,778
	19 PHYSICAL SCI	.GR	3.50	1,797	6,290
	19 PHYSICAL SCI	.LD	60.17	878	52,203
	19 PHYSICAL SCI	.UD	54.70	1,036	56,673
	19 PHYSICAL SCI	Totals	118.37	973	115,166
	20 PSYCHOLOGY	.LD	89.50	766	58,519
	20 PSYCHOLOGY	.UD	39.97	830	33,960
	20 PSYCHOLOGY	Totals	129.47	792	102,479
	21 PUBLIC AFFRS	.GR	38.38	1,451	55,682
	21 PUBLIC AFFRS	.LD	158.67	794	125,990
	21 PUBLIC AFFRS	.UD	85.03	907	77,156
	21 PUBLIC AFFRS	Totals	282.07	918	258,827
	22 SOCIAL SCI	.GR	21.38	1,333	28,488
	22 SOCIAL SCI	.LD	313.40	772	241,815
	22 SOCIAL SCI	.UD	201.30	856	172,300
	22 SOCIAL SCI	Totals	536.07	826	442,603
	91 CONTINU ED	.LD	42.33	864	36,558
	91 CONTINU ED	.UD			
	91 CONTINU ED	Totals	42.33	864	36,558
	99 UNDECLARED	.GR	59.13	1,433	84,751
	99 UNDECLARED	.LD	170.57	764	130,260
	99 UNDECLARED	.UD			
	99 UNDECLARED	Totals	229.69	936	215,011
	INSTITUTION Totals		4,775.66	917	4,379,884
	System Totals		7,781.55	908	7,065,880

Consideration of the needs of those activities that support the instructional function at the two state colleges was the next step in the illustrative planning process. As was stated earlier, special analysis of individual cases is recommended for the support activity areas. However, once formulas have been established, they can be inserted into the SPBS for calculation. Table IX shows some hypothetical formulas used with the state college data for illustration purposes. These formulas are not actual, and any resemblance they may bear to the actual needs of the two colleges is purely coincidental. Using the formulas in Table IX, the SPBS produced a final report, the Summary Budget Report shown in Table X. This report displays the total operating budget for each institution in an abreviated fashion.

The Statewide Planning and Budgeting System illustrated above is a public domain software package developed by the author and colleagues at Virginia Polytechnic Institute and State University. The developmental research was supported by contracts with statewide agencies in Pennsylvania, Virginia, and Missouri. It is written in ANS COBOL and requires approximately 150,000 bytes of core storage. The programming was done by Mr. James Farmer of Systems Research, Inc. in Los Angeles. Mr. Farmer was assisted by Mr. Jack Lewis, a doctoral candidate at VPI & SU and by Mr. Charles Fletcher, Director of Data Processing at the American Council on Education in Washington, D.C. The SPBS, as displayed above, is intended only to illustrate the assistance that such planning tools can bring to the statewide higher education budgeting process. Local agencies and planning committees will frequently prefer to develop their own unique software packages to meet unique local needs. If the prototype SPBS stimulates the thinking of local developers, it will have served its primary purpose.

Table IX

Support Activity Cost Formulas

Institution	Support Activity	Formula
ALL	Community Education	$80,000 Base
ALL	Summer Session	5% of Instructional Salaries
ALL	Library	$100,000 Base
ALL	Student Services	$50,000 Base + $1.00 per Student Credit
ALL	Executive Management	$120,000 Base
ALL	Computing	$20,000 Base + $.30 per Student Credit
ALL	Fiscal Operations	$30,000 Base + 3% of Instructional Salaries
ALL	Administrative Services	$140,000 Base
ALL	Physical Plant M. & O.	$190,000 Base + 5% of Instructional Salaries
ALL	Logistical Services	$80,000 + $.50 per Student Credit
ALL	Community Relations	$29,000 Base

SPSS1
PROTOTYPE
VPISU-HUFF

TABLE X
STATEWIDE PLANNING AND BUDGETING SYSTEM

SUMMARY BUDGET REPORT

NAME	EXPENSE TYPE	BUDGET
Alpha State College	DISCIPLINE BDGTS	2,685,995
	01 COMMUNITY ED	80,000
	02 SUMMER SESS	116,333
	03 LIBRARY	100,000
	04 STUDENT SERV	139,644
	05 EXEC MANG	120,000
	06 COMPUTING	46,893
	07 FISCAL OPER	99,800
	08 ADMIN SERV	140,000
	09 PHYS PLANT	306,333
	10 LOGISTIC SER	124,822
	11 COMM RELAT	29,000
	INSTITUTIONAL TOTAL	3,988,820
Beta State College	DISCIPLINE BDGTS	4,379,883
	01 COMMUNITY ED	80,000
	02 SUMMER SESS	190,710
	03 LIBRARY	100,000
	04 STUDENT SERV	190,346
	05 EXEC MANG	120,000
	06 COMPUTING	52,104
	07 FISCAL OPER	144,426
	08 ADMIN SERV	140,000
	09 PHYS PLANT	380,710
	10 LOGISTIC SER	150,173
	11 COMM RELAT	29,000
	INSTITUTIONAL TOTAL	5,967,351
	SYSTEM TOTAL	9,956,171

A Plan for Action

It is relatively easy to engage in conversation regarding needed alterations or improvements in the statewide higher education planning process. It is often very difficult to move from the discussion stage to the action stage. People are most comfortable with a familiar environment, with a process that is a known quantity, even though they must admit that the current process has a number of flaws. In proclaiming the need for change in the funding procedures, we frequently use such terms as visibility of the decision process, logical approaches, broadened participation, and consensus. No one can be overtly against such concepts, but there will always remain a hesitancy among educators to take significant action directed toward change since they can never quite be sure exactly how a change may ultimately affect their institution and their ability to pursue their personal objectives. All of us like to operate in an atmosphere of autonomy. While changes in the planning and funding approaches may provide new opportunities for some, they may also restrict the current autonomy of others.

People respond to incentives. They weigh potential benefits and potential penalties in any new situation and then decide whether to play a passive role, an active role in support of the change, or an active role in opposition to the proposed change. Consequently, those who wish to be effective as change agents must learn to manage the change effort in such a way as to provide the greatest possible number of benefits (incentives) to the key participants. Incentives come in many forms, only a few of which are economic in nature. Professional people are greatly concerned with recognition of a job well done, personal knowledge that they are improving their performance, and awareness that their voice has impact on the decision-making process.

Figure 3: Decision Matrix for Discipline Planning Center Construction

INSTITUTIONS AND COURSE LEVELS

DISCIPLINE CLUSTERS	Universities			State Colleges			Community Colleges	
	LD	UD	GD	LD	UD	GD	LD	
Social Sciences	1			1			1	
Physical Sciences	2	2		2	2		2	
Letters	1			1			1	

*In this example of planning center construction, 1 indicates those cells that might be included in Planning Center 1. 2 indicates those cells that might be included in Planning Center 2. Other cells would have to be associated with additional planning centers in a similar manner.

purely fiscal vantage point may prove totally impractical when viewing the same institutions from a human or pedagogical perspective. Regular self-analysis by institutions will clarify the constraints and possibilities for improvement within which differential funding formulas must be developed.

Task 4 - Develop Technical Support Capability: This document has stressed the desirability of developing the technical capability to support an iterative budgeting and planning process. If this task is not undertaken simultaneously with the first three tasks, the entire effort to improve and refine the budgeting process may be quite shallow. Information, coupled with suggested funding policies, must be synthesized quickly in order that many alternatives may be weighed in a timely fashion. Computers provide the only means or accurately repeating the thousands of calculations necessary for the development of alternative sets of institutional budgets within a short period of time.

Task 5 - Conduct Planning Sessions: All of the work done under the first four tasks will be preparation for initiating the fifth task. It is at this point that the appropriate groups of statewide planning participants must be brought together, given the best available information, supported with the best available technology, and asked to engage in a thoroughly professional group planning process. Compromise and patience must be key ingredients in that process. However, with improved information feedback provided by improved technology, there is at least the possibility of the more orderly, visible, logical planning process that educators and state officials have discussed for so long.

A Final Caution

Any new undertaking usually begins with high hopes. Many soon develop the kind of arthritic pains that can cause early demise. A spectacular idea on paper may look totally anemic when put to the test of real world application. Those who pursue change in such sensitive matters as budget determination should not expect quantum leaps in short periods of time. Progress comes in a succession of small, earned improvements.

There are many pitfalls along the approach to higher education differential planning described in this document. New users of the kind of technological tools referred to in the state college illustration may succumb to a false sense of precision. The computer is a wonderful tool for speeding up many chores that used to be long and arduous. However, if the computer is headed in the wrong direction, it has an equally efficient capacity to lead us into error faster than ever before. Computers cannot and should not make decisions. Computers make things possible but people make things happen. It should always be remembered that planning is essentially a human activity, not a computer calculation. Frequently, analysts employed by statewide agencies become so engrossed with conducting historical analyses as a form of audit that they lose sight of what planning is all about. Planning should be more concerned with what ought to be than with what has been. Historical analysis lets us know where we have been so that we can decide better where we ought to be going.

Some educators would have us believe that, if complete consensus cannot be gained relative to a proposed change, no change is in order. Complete consensus is rare indeed, especially among educators and

people in the political ranks. However, seeking reasonable consensus is an absolute necessity. Not being able to decide when reasonable consensus has been attained may paralyze efforts to improve the planning process. Should error of judgment occur in knowing when reasonable consensus has been reached, failure will be the probable result. On the other hand, never displaying enough confidence to declare reasonable consensus and move ahead will surely prohibit success.

The rural people of southern Appalachia are fond of saying, "You can't push a rope." This simply means that those who do not want to change will bend under pressure but will never really cooperate in achieving the change. Colleges and universities, like all bureaucratic organizations, are very experienced at bending like a rope but never going where they do not want to go. The obvious moral of this analogy is that more ground can be gained, when dealing with ropes and educational institutions, by leading from the front than by pushing from behind.